

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:	§	
Ilya V. Karpov	§	Art Unit: 2815
	§	
Serial No.:	§	Examiner: Eugene Lee
10/634,141	§	
	§	
Filed:	§	Conf. No.: 5089
August 4, 2003	§	
	§	
For:	§	Docket: ITO.0554US
Reducing Parasitic	§	P16589
Conductive Paths in	§	
Phase Change Memories	§	

Mail Stop: **Appeal Brief-Patents**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR REHEARING
PURSUANT TO 37 C.F.R. § 41.52

Sir:

This requests reconsideration of the obviousness finding set forth in the Board's Decision.

The Board's Decision is premised on an analysis of what one skilled in the art would do, which, rather than demonstrating obviousness, conclusively demonstrates non-obviousness. The Board departs from the analysis used by the Examiner and, therefore, the Board's analysis has never been addressed by applicant before. It is respectfully submitted that the Board's analysis is plainly wrong and should be reconsidered.

Claim 1 requires that you form a pore in an insulator and then form sidewall spacers in the pore and then form a heater within the pore with the sidewall spacer. Then you remove the upper portion of the heater to form a gap and then fill the gap with phase change material that extends over the insulator. Then you pattern an etch to phase change material over the insulator.

The Board conclusively finds that what one skilled in the art would do is as follows:

Thus, for advantages of time and material savings, we find it would be manifestly obvious to one skilled in the art to have formed the method steps of claim 1 according to Chiang but without the step of removing the upper portion of the heater.

Date of Deposit: February 19, 2009
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Cynthia L. Hayden
Cynthia L. Hayden

See Board Decision at page 7.

Thus, the Board effectively found that what one skilled in the art would be motivated to do is what Chiang teaches, avoiding removal of the upper portion of the heater. One wonders then why is the applicant trying to get a patent on a different approach? It is respectfully submitted that it is because he realizes that what one skilled in the art would do is not the best approach.

The point of the claimed invention is that what you want to do is minimize the amount of chalcogenide material that must be heated. The problem with the Chiang approach is that he has a very small heater and a very long chalcogenide material. Thus, he saves the trouble of removing the chalcogenide material, at the expense of poor operating characteristics of his memory cell. His poor operating characteristics would be due to the extra energy needed to heat all the extra chalcogenide. Generally, what happens is a conductive filament forms through the chalcogenide upon heating. In the claimed invention, a short filament would be all that would be needed. In Chiang, the filament that forms in phase change would have to extend almost the entire length of the pore. This requires extra programming energy and greater power consumption of the resulting memory.

Thus, the claimed invention is advantageous and the Board itself has already found that one skilled in the art would not do what is claimed. The Board suggests that Chiang's solution is smarter, but it is respectfully submitted that it is not. For the very reasons set forth by the Board, the non-obviousness of the claimed invention is conclusively established and the decision should be reconsidered.

The Board may also note that Harshfield does suggest forming a tall heater and removing part of the heater. But the problem is that Harshfield does things in a way different from the claimed invention. He forms the tall heater, reduces the height of the heater, and then forms sidewall spacers. With the claimed invention, by forming the sidewall spacers first, the amount of heater material that must be removed, given the limitations that lithography places on the size of pores, is dramatically reduced. As a result, the heater removal step is reduced and greatly simplified. As the Board pointed out, reducing the need to remove the upper portion of the heater is an important advantage (see the portion of the Board Decision quoted above).

Thus, again, the Board's rationale further demonstrates the non-obviousness, rather than the obviousness, of the claimed invention.

Finally, the Board suggests that "If additional heater material is required to be removed from the heater in Chiang, then it would have been obvious to the one skilled in the art to remove the heater material as taught by Harshfield." The Board's Decision suggests that it would be obvious to do it the way Harshfield does it. But the claimed invention does not do it the way Harshfield does it and, therefore, the analysis simply makes no sense. The way Harshfield does it is wasteful in the very way that the Board pointed out was disadvantageous, namely, unduly removing heater material.

The Board simply cannot have it both ways. Based on their own analysis, the rejection should have been reversed and, therefore, reconsideration is requested.

Respectfully submitted,

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